

Ephemeris for Physical Observations of the Moon.
By A. Marth, Esq.

(Continued from page 156.)

Selenographical Colong. and Latitude of the Point on the Moon's Surface, which has the

Gr. Midnight. 1873.	Sun's Centre in the Zenith. Colong. Lat.	Earth's Centre in the Zenith. Colong. Lat.	Geocentric Libration Amount. Direction.
April 29	302°.97 -0°.41	84°.48 -2°.75	6°.17 26°.5 s. p. quadrant.
30	315°.20 .39	84°.83 4°.07	6°.58 38°.3 "
May 1	327°.42 .37	85°.49 5°.16	6°.85 49°.0 "
2	339°.64 .34	86°.40 5°.98	6°.98 59°.1 "
3	351°.86 .32	87°.50 6°.53	6°.99 69°.1 "
4	4°.07 -0°.29	88°.72 -6°.79	6°.91 79°.4 "
5	16°.27 .26	89°.97 6°.75	6°.75 89°.8 s. p.
6	28°.47 .24	91°.21 6°.43	6°.54 79°.4 s. f.
7	40°.67 .21	92°.35 5°.82	6°.28 68°.1 "
8	52°.86 .18	93°.35 4°.94	5°.97 55°.9 "
9	65°.04 .15	94°.16 3°.83	5°.65 42°.7 "
10	77°.22 .12	94°.74 2°.48	5°.35 27°.7 "
11	89°.40 -0°.08	95°.07 -1°.02	5°.17 11°.4 s. f.
12	101°.59 .05	95°.11 +0°.55	5°.14 6°.2 n. f.
13	113°.77 -.02	94°.84 2°.11	5°.28 23°.6 "
14	125°.95 +.01	94°.36 3°.58	5°.64 39°.5 "
15	138°.14 +0°.04	93°.70 4°.87	6°.11 52°.9 "
16	150°.34 +0°.07	92°.89 5°.88	6°.55 63°.9 "
17	162°.54 +0°.10	91°.95 6°.54	6°.82 73°.5 "
18	174°.75 +0°.12	90°.96 +6°.81	6°.88 82°.5 n. f.
19	186°.96 .15	89°.87 6°.66	6°.66 88°.9 n. p.
20	199°.19 .18	88°.79 6°.11	6°.23 78°.8 "
21	211°.42 +0°.20	87°.76 +5°.18	5°.64 66°.6 "
29	309°.37 +0°.39	86°.51 -5°.73	6°.71 58°.8 s. p.
30	321°.61 .41	87°.42 6°.37	6°.87 68°.0 "
31	333°.84 .44	88°.53 6°.72	6°.88 77°.7 "
June 1	346°.07 +0°.46	89°.71 -6°.77	6°.78 87°.6 s. p.
2	358°.30 .49	90°.97 6°.54	6°.61 81°.6 s. f.
3	10°.52 .51	92°.22 6°.01	6°.41 69°.8 "
4	22°.73 .54	93°.37 5°.23	6°.22 57°.3 "
5	34°.93 .57	94°.36 4°.20	6°.05 44°.0 "
6	47°.13 .60	95°.11 2°.95	5°.90 30°.1 "
7	59°.33 .63	95°.57 -1°.52	5°.77 15°.3 s. f.

Gr. Midnight. 1873.	Sun's Centre in the Zenith.		Earth's Centre in the Zenith.		Geocentric Libration.	
	Colong.	Lat.	Colong.	Lat.	Amount.	Direction.
June 8	71°53'	+0°65	95°70'	+0°02	5°70	0°2 n.f.
9	83°72	.68	95°47	1°59	5°70	16°2 "
10	95°91	.71	94°90	3°12	5°81	32°5 "
11	108°09	.74	94°00	4°48	6°00	48°3 "
12	120°28	.76	92°87	5°59	6°20	64°5 "
13	132°48	.79	91°57	6°35	6°54	76°2 "
14	144°68	.81	90°22	6°71	6°71	88°1 n.f.
15	156°89	+0°84	88°92	+6°65	6°74	80°8 n.p.
16	169°10	.86	87°73	6°17	6°57	69°9 "
17	181°33	.88	86°73	5°32	6°24	58°5 "
18	193°55	.90	85°95	4°16	5°80	45°8 "
19	205°78	.92	85°39	2°78	5°38	31°1 "
20	218°02	+0°94	85°05	+1°26	5°11	14°3 n.p.
28	316°02	+1°08	89°33	-6°67	6°70	84°3 s.p.
29	328°26	1°10	90°57	6°50	6°52	85°0 s.f.
30	340°50	1°12	91°86	6°06	6°34	73°0 "
July 1	352°73	1°14	93°13	5°35	6°20	59°8 "
2	4°95	1°16	94°33	4°40	6°17	45°5 "
3	17°17	1°18	95°36	3°24	6°26	31°2 "
4	29°39	1°20	96°14	1°91	6°43	17°3 "
5	41°59	1°21	96°58	-0°45	6°60	3°9 s.f.
6	53°79	+1°23	96°63	+1°08	6°72	9°3 n.f.
7	65°99	1°25	96°25	2°60	6°77	22°6 "
8	78°18	1°27	95°41	4°04	6°75	36°8 "
9	90°37	1°29	94°17	5°19	6°65	51°3 "
10	102°56	1°31	92°61	6°07	6°61	66°8 "
11	114°75	1°32	90°86	6°54	6°60	82°5 n.f.
12	126°95	1°34	89°09	6°57	6°63	82°1 n.p.
13	139°15	+1°35	87°45	+6°16	6°66	67°6 "
14	151°35	1°36	86°05	5°36	6°65	53°7 "
15	163°56	1°37	84°96	4°24	6°58	40°2 "
16	175°78	1°38	84°23	2°89	6°45	26°7 "
17	180°00	1°39	83°83	+1°40	6°33	12°8 n.p.
18	200°23	1°40	83°74	-0°13	6°26	1°2 s.p.
19	212°47	1°41	83°91	-1°62	6°31	15°2 "
20	224°71	+1°41	84°30	-3°00	6°44	27°8 s.p.

Ephemeris for Physical Observations of Mars' Opposition of 1873.
By A. Marth, Esq.

1873. Gr. Noon.	Areographical Western Longitude of Centre of Mars' Disk.	Areogra- phical Latid. of Centre of Mars' Disk.	Angle of Posit. of Mars' Axis.	Dia- meter.	Defect of Illumination.			Posit.
					Prec. Limb.	North Limb.	Greatest Amount.	
April 1	266° 7'	Difference. 1752 + 3° 5'	+ 14° 44'	41° 05'	13° 93'	0° 28'	0° 03'	286° 6'
6	222° 2'	" + 3° 5'	14° 86'	41° 14'	14° 55'	0° 23'	0° 02'	285° 5'
11	177° 7'	" + 3° 8'	15° 43'	41° 15'	15° 13'	0° 16'	0° 01'	284° 4'
16	133° 5'	" + 4° 0'	16° 13'	41° 15'	15° 64'	0° 09'	0° 00'	283° 0'
21	89° 5'	" + 4° 1'	16° 92'	41° 11'	16° 06'	0° 03'	..	280° 0'
26	45° 6'	" + 4° 2'	17° 78'	41° 04'	16° 36'	foll. l.	south l.	..
May 1	1° 8'	" + 4° 2'	18° 67'	40° 92'	16° 53'	0° 01'	0° 00'	118° 3'
6	318° 0'	" + 4° 2'	19° 54'	40° 75'	16° 55'	0° 06'	0° 01'	112° 6'
11	274° 1'	" + 4° 1'	20° 35'	40° 56'	16° 45'	0° 15'	0° 02'	111° 3'
16	229° 9'	" + 3° 8'	21° 08'	40° 37'	16° 22'	0° 27'	0° 04'	110° 8'
21	185° 6'	" + 3° 7'	21° 72'	40° 16'	15° 89'	0° 41'	0° 06'	110° 6'
26	140° 9'	" + 3° 3'	22° 21'	40° 06'	15° 48'	0° 55'	0° 08'	110° 5'
31	95° 8'	" + 2° 9'	22° 59'	39° 98'	15° 02'	0° 67'	0° 11'	110° 5'
June 5	50° 4'	" + 2° 6'	22° 85'	39° 96'	14° 52'	0° 82'	0° 13'	110° 4'
10	4° 7'	" + 2° 3'	22° 98'	40° 01'	14° 02'	0° 94'	0° 16'	110° 4'
15	318° 7'	" + 1° 6'	22° 99'	40° 13'	13° 51'	0° 03'	0° 18'	110° 3'
20	272° 3'	+ 22° 88'	40° 30'	13° 01'	11° 11'	0° 19'	1° 22'	110° 2'

The difference 1752° of the successive values in the column of longitudes corresponds to an hourly increase of 14°.6. To find the areographical longitude of the centre of the disk for the hour of observing, the following values are to be added to the next preceding value given in the table (subtracting 360°, when the sum is larger), on the first, second, third, fourth, and fifth day.

At 8 ^h Gr.M.T.	116° 8'	107° 2'	97° 6'	88° 0'	78° 4'
9	131° 4'	121° 8'	112° 2'	102° 6'	93° 0'
10	146° 0'	136° 4'	126° 8'	117° 2'	107° 6'
11	160° 6'	151° 0'	141° 4'	131° 8'	122° 2'
12	175° 2'	165° 6'	156° 0'	146° 4'	136° 8'
13	189° 8'	180° 2'	170° 6'	161° 0'	151° 4'
14	204° 4'	194° 8'	185° 2'	175° 6'	166° 0'

and some further allowance must be made for the surplus of the difference over 1752°.

The ephemeris is founded upon the same elements as the ephemeris for the opposition of 1869, given in the *Monthly Notices*, and that for the opposition of 1871, given in the *Astronomical Register*.